



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/724,616

12/02/2003

Gyu Ha Choc

P24344

2603

7055 7590 03/27/2007
GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

HALL, ASHA J

ART UNIT

PAPER NUMBER

1709

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
--	-------------------	---------------

3 MONTHS

03/27/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/27/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary

Application No.

10/724,616

Applicant(s)

CHOE, GYU HA

Examiner

Asha Hall

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/02/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "pre-determined communication method" in claim 1 is a relative term, which renders the claim indefinite. The term "pre-determined communication method" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "pre-determined method" in claim 10 is a relative term, which renders the claim indefinite. The term "pre-determined method" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1709

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al. (KR20030013661) in view of Tatsuyuki et al. (JP2003005849).

In regard to claim 1, Han et al. discloses a system for implementing a virtual solar cell, comprising:

- (a) a data detector/data communication part (p.4, paragraph 4) including a measurement sensor and adapted to collect external environment data/information from the outside (p.4, paragraph 6);
- (b) a controller for receiving real-time data (p.3, paragraph 16) from the data detector (p.3, paragraph 17), classifying the received data in a predetermined format/serial communication method using RS232C or RS485 (p.4, paragraph 6) to transmit the classified data to a data logging unit /information storage device (p.4, paragraph 6);
- (c) generating a voltage-current model having the same effect as that of an actual solar cell on the basis of the received data (p.4, paragraph 18);
- (d) generating a pulse width modulation signal for controlling the operation of the power converter according to the model (p.4, paragraph 17);
- (e) the power converter for converting input power (p.4, paragraph 16) in response to the pulse width modulation signal (p.4, paragraph 17) to provide power to a load (p.3, paragraph 8);

Art Unit: 1709

(f) the data logging unit/ information storage device (p.4, paragraph 6) for communicating with the controller (p.3, paragraph 16) or the data detector/data communication part (p.4, paragraph 4) according to a predetermined communication method (p.4, paragraph 6), and storing data/information storage device (p.4, paragraph 6) received from the controller or the data detector.

Han et al. discloses the elements of claim 1 as discussed above, but fails to disclose a virtual solar cell. Tatsuyuki discloses a system for implementing data (paragraph 4) and further describes a solar battery simulator, wherein it carries out a simulation of the amount of electrical energy a solar-module installed corresponding to a surrounding environment (paragraph 10). Thus, it would have been obvious to one skill in the art at the time of the invention to include a virtual/simulated solar cell module described in Tatsuyuki et al. in the system of Han et al. in order to collect corresponding properties of solar cell module to the external environmental data.

With respect to claim 2, modified Han et al. discloses elements of claim 1 as discussed above, but fails to describe the data detector that further includes a unit cell solar battery. Tatsuyuki et al. discloses a system for implementing data (paragraph 4) and describes the use of a solar battery database with which the exact amount of electrical energy of a solar cell module is obtained (paragraph 9). Tatsuyuki et al. further teaches that the purpose of extracting the properties of each module is to use it in the calculation of the output electrical energy corresponding to an external environmental data (paragraph 10). Hence, it would have been obvious to one skill in the art at the

Art Unit: 1709

time of the invention to include a solar battery database described in Tatsuyuki et al. in the system of Han et al. in order to collect correlative corresponding properties of solar battery/solar cell module to the external environmental data.

With respect to claim 3, Han et al. discloses elements of claim 1 as discussed above, but fails to disclose to a measurement sensor. Tatsuyuki et al. discloses a system for implementing data (paragraph 4) and describes the measurement sensor, which includes at least one of a temperature sensor, insolation sensor or wind velocity sensor (paragraph 11). Tatsuyuki et al. characterizes the solar cell energy generator by the ambient temperature, insolation sensor, or wind velocity. It would have been obvious to one skill in the art at the time of the invention to incorporate the measurement sensor described in Tatsuyuki to the system of Han et al. to adequately characterize solar cell modules.

In regard to claim 4, Han et al. discloses elements of claim 1, but fails to disclose to a classification by time, place and manufacturer. Tatsuyuki et al. discloses a system for implementing data (paragraph 4) and discloses the data-logging unit (paragraph 50-51) classifies data by time, place and solar cell manufacturers to store the data (paragraph 58). He describes this as a method of acquiring information on a functional basis that would be effectively simulates solar power generation (paragraph 54). Thus, it would have been obvious to one skill in the art at the time of the invention to apply the data-logging unit of Tatsuyuki et al. to the system of Han et al. that classifies data by time, location and manufacturer to adequately characterize the solar cell.

With respect to claim 5, Han et al. discloses the system for implementing a virtual solar cell as claimed in claim 1, wherein the controller/direct-current voltage regulator (p.3, paragraph 1) generates the voltage-current (p.3, paragraph 1) on the basis of the real-time data/operating conditions (p.3, paragraph 16) received from the data detector/ data communication part (p.4, paragraph 4) or previously stored data/database (p.3, paragraph 17) received from the data logging unit/information storage device (p.4, paragraph 6).

With respect to claim 6, a method for implementing a virtual solar cell, comprising:

- (a) allowing a controller(p.3, paragraph 16) to receive data from the outside (p.4, paragraph 6);
- (b) classifying the received data in a predetermined format or stores it (p.4, paragraph 6);
- (c) generating a voltage-current model for obtaining output characteristic of an actual solar cell on the basis of the received data result of the current control (p.4, paragraph 18); and
- (d) controlling a power converter (p.4, paragraph 16) in response to the pulse width modulation signal (p.4, paragraph 17).

Han et al. discloses the elements of claim 6 as discussed above, however they fail to disclose a virtual solar cell. Tatsuyuki et al. discloses a system for implementing data (paragraph 4) and describes a solar battery simulator, wherein it carries out a simulation of the amount of electrical energy a solar-module installed corresponding to a

Art Unit: 1709

surrounding environment (paragraph 10). Thus, it would have been obvious to one skill in the art at the time of the invention to virtual/simulated solar cell module described in Tatsuyuki et al. in the system of Han et al. in order to collect corresponding properties of solar cell module to the external environmental data.

In regard to claim 7, Han et al. discloses elements of claim 6 as discussed above, but fails to disclose to temperature, insolation, and output characteristic data. Tatsuyuki et al. discloses a system for implementing data (paragraph 4) and describes a database, which includes at least one of ambient temperature, insolation/solar radiation energy, and characterization (paragraph 12). Tatsuyuki et al. characterizes by the ambient temperature and insolation/solar radiation energy of the solar cell modules (paragraph 13). It would have been obvious to one skill in the art at the time of the invention to implement a controller that receives temperature, insolation and output characteristic data as described in Tatsuyuki to the system of Han et al. to adequately characterize solar cell modules.

With respect to claim 8, Han et al. discloses the elements of claim 6 as described above, but fails to disclose to a classification by time, place and manufacturer. Tatsuyuki et al. discloses a system for implementing data (paragraph 4) and discloses the data-logging unit classifies data (paragraph 50-51) by time, place and solar cell manufacturers to store the data (paragraph 58). He describes this a method of acquiring information on a functional basis that would be effectively execute the objective of his invention (paragraph 54). Thus, it would have been obvious to one skill in the art at the time of the invention to apply the data-logging unit of Tatsuyuki et al. to the system of

Art Unit: 1709

Han et al. that classifies data by time, location and manufacturer to adequately characterize the solar cell.

In regard to claim 9, Han et al. discloses the system as claimed in claim 6 as discussed above, wherein the step of generating the voltage-current model, the controller/direct-current voltage regulator (p.3, paragraph 1) generates the voltage-current (p.3, paragraph 1) on the basis of the real-time data/operating conditions (p.3, paragraph 16) received from the data detector/ data communication part (p.4, paragraph 3) or arbitrary data /database (p.3, paragraph 17) inputted by a user through a predetermined method/information storage device (p.4, paragraph 6).

With regard to claim 10, Han et al. discloses all of the elements of claim 9 above, but fails to disclose the predetermined method as a method of inputting data through a user interface screen. Tatsuyuki et al. also discloses the system for implementing data through simulations (paragraph 4) and discloses the predetermined method of into inputting data through a program inside the computer system/equipment that executes this program (paragraph 53-54). Thus, it would have been obvious to one skill in the art at the time of the invention to combine the method of utilizing a computer to input data described by Tatsuyuki et al. to modify the system for implementing data of Han et al. in order to utilize a computer to execute the program.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asha Hall whose telephone number is 571-272-9812.

The examiner can normally be reached on Monday-Friday 7:30-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJH

A.J.H.

Alexa Neckel
ALEXA D. NECKEL
SUPERVISORY PATENT EXAMINER